

CLAIMS

1. An optical information recording method of  
an optical information recording and reproduction device  
that uses a semiconductor laser to record or reproduce  
5 data in an optical recording medium, said optical  
information recording method comprising a step of:  
adjusting a calculated value of optimum  
recording power for recording data or an object value of  
recording power when data are being recorded, based on a  
10 detected value of an optical path difference of the  
optical recording medium.
2. The optical information recording method as  
claimed in claim 1, wherein  
15 when calculating the optimum recording power  
before recording data in the optical recording medium, an  
optimum index indicating the optimum recording power is  
corrected with respect to a predetermined first index  
based on the detected value of the optical path  
20 difference of the optical recording medium, and the  
corrected optimum index is used as the calculated value  
of the optimum recording power, said predetermined first  
index being obtained by reproducing a trial write region  
that is recorded with recording power being varied  
25 stepwise.

3. The optical information recording method as claimed in claim 2, wherein

5 a value of the predetermined first index is an asymmetric value equaling a ratio of a difference between a maximum and a minimum of a direct current component of a reproduction signal from the trial write region to a sum of the maximum and the minimum.

10 4. The optical information recording method as claimed in claim 1, wherein

an object index indicating the optimum recording power is corrected and updated continually based on the detected value of the optical path difference of the optical recording medium with respect to a predetermined second index, and the corrected object index is used to correct the optimum recording power while recording, said predetermined second index being obtained from a detection signal associated with an amount of light reflected from the optical recording medium when data are being recorded in the optical recording medium.

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5. The optical information recording method as claimed in claim 4, wherein

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a value of the third index is an average value of the detected signal associated with the amount of reflected light or a sample value of the amount of reflected light when forming a recording mark normalized  
5 by the recording power.

6. The optical information recording method as claimed in any one of claims 1 through 5, wherein  
an initial value of the optical path  
10 difference of the optical recording medium is obtained by reading out information of the optical path difference of the optical recording medium or information of a distribution of the optical path difference of the optical recording medium from pre-format information to  
15 calculate a detected value of the optical path difference before the data are recorded or when the data are being recorded.

7. The optical information recording method as  
20 claimed in any one of claims 1 through 6, wherein  
a change of the optical path difference is calculated from the amount of light reflected from the optical recording medium; and  
the first index or the third index is  
25 corrected by a conversion unit according to the change.

8. The optical information recording method as claimed in any one of claims 1 through 6, wherein

the first index or the third index is  
5 corrected by using a detected value of a detection unit for detecting an elliptically polarized light beam component of the light reflected from the optical recording medium.

10 9. The optical information recording method as claimed in any one of claims 1 through 6, wherein the first index or the third index is corrected by using a detected value of a temperature or a change of the temperature near the optical recording medium based on  
15 desired temperature dependence.

10. An optical disk used as an optical recording medium in an optical information recording and reproduction device, said optical disk being recorded  
20 with information by using the information recording method as claimed in any one of claims 1 through 9, wherein

information indicating an optical path difference of a trial write region assigned to the  
25 optical disk or distribution information of the optical

path difference of the optical disk in a radial direction is formed in advance as recording condition information or recording management information among pre-format information of the optical disk.

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11. An optical information recording and reproduction device that uses the semiconductor laser to record or reproduce data in the optical recording medium by using the information recording method as claimed in  
10 any one of claims 1 through 9.

12. The optical information recording and reproduction device as claimed in claim 11, wherein the optical disk as claimed in claim 10 is used as the  
15 optical recording medium.